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IS 5474 (2012): Shipbuilding - Ships Sides Scuttles [TED
17: Shipbuilding]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
पोत निर्माण — शिप के साइड स्कटल्स
(दूसरा पुनरीक्षण)

Indian Standard
SHIPBUILDING — SHIPS' SIDE SCUTTLES
(*Second Revision*)

ICS 47.020.10

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was initially issued in 24 Parts, each Part covering manufacturing details and dimensions of individual components, such as main frame, glassholder, deadlight, etc, for each type of round window (side scuttle) separately. In the first revision of this standard in 1989, dimensions were rationalized and only critical dimensions affecting the interchangeability were specified. The first revision was brought out in 5 Parts, covering the general requirements, dimensions of heavy (Type A) round windows, dimensions of medium (Type B) round windows, and dimensions of light (Type C) round windows, and manufacture and installation on board ships. The second revision of this standard do away with five separate standards and bring out a composite standard covering all types of round windows giving dimensions, materials, etc, for critical items only. Further, round windows of nominal size 450 mm have been deleted from heavy (Type A) round windows.

This standard generally incorporates the requirements under the *Merchant Shipping Act*, 1958, and the Rules made thereunder; and in addition, general requirements and positioning of ships' round windows is subject to the approval by the Government of India under the said Act and the Rules.

In the formulation of this standard, considerable assistance has been derived from ISO 1751/1993 'Shipbuilding and marine structures — Ships' side scuttles' issued by the International Organization for Standardization.

This standard is also based on the experience on ships window and glass manufacturers, shipbuilders and authorities who apply to ships the Regulations of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974), with Amendments, 1981 and of the International Convention on Load Lines, 1966.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHIPBUILDING — SHIPS' SIDE SCUTTLES

(*Second Revision*)

1 SCOPE

This standard specifies the classification of side scuttles for ships (series, types and models) and gives the dimensions for interchangeability and construction, materials, tests, marking and designation of these side scuttles.

The requirements of fire resistant round windows are not covered in this standard.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1365 : 2005/ ISO 2009 : 1994	Slotted countersunk flat head screws (common head style) — Product grade A (<i>fourth revision</i>)
1366 : 2002	Slotted cheese head screws — Product grade A (<i>third revision</i>)
4218 (Part 2) : 2001/ISO 261 : 1998	ISO General purpose metric screw threads : Part 2 General plan (<i>second revision</i>)
6101 : 2005/ ISO 1580 :1994	Slotted pan head screws — Product grade A (<i>second revision</i>)
6180 : 1989	Toughened safety glasses for ships' round windows — Specification (<i>first revision</i>)
7483 : 2005/ ISO 7045 : 1994	Pan head screws with Type H or Z cross recess — Product grade A (<i>second revision</i>)
7485 (Part 2) : 2005/ ISO 7046-2 : 1990	Counter sunk flat head screws (common head style) with Type H or Type Z cross recess — Product grade A: Part 2 Steel of property class 8.8 stainless steel and non-ferrous metals (<i>second revision</i>)
7486 : 2005/ ISO 7047 : 1994	Countersunk raised head screws (common head style) with Type H or Type Z cross recess — Product grade A (<i>second revision</i>)
8809 : 1991	Shipbuilding — Gaskets for ship's side windows (<i>first revision</i>)

IS No.

Title

8911 : 2005/ ISO 2010 : 1994	Countersunk slotted raised head screws (common head style) — Product grade A (<i>first revision</i>)
11914 : 1986	Glossary of terms for ships' windows
12693 : 1989	Positioning of ships' round windows — Guidelines

3 DEFINITIONS

For the purpose of this standard, besides the definitions given in IS 11914 and the following shall apply.

3.1 Normal Round Window (Side Scuttles) — A ships' round window having a toughened safety glass pane.

3.2 Passenger Ship — A ship carrying more than 12 passengers other than the crew.

3.3 Cargo Ship — Any ship which carries cargo and is not a passenger ship.

3.4 Bulk-Head Deck — It is the uppermost deck up to which the transverse watertight bulkheads are carried and is used with reference to passenger ships only.

3.5 Datum Deck — It is the free board deck in a cargo ship (non-passenger ship) and the bulkhead deck or free board deck, whichever is higher, in a passenger ship (*see* Fig. 1).

3.6 Free Board Deck — It is the uppermost complete deck exposed to weather and sea having permanent means of closing all openings in its weather portions and below which all openings in the sides of the ship are fitted with means of watertight closing. In flush deck ships and ships with detached superstructures it refers to the upper deck.

3.7 Superstructure — A decked structure on the freeboard deck which entitles the ship to reduction in freeboard. Deckhouses whose sides are within 1.22 m or 4 percent of the breadth of the ship, whichever is lower from the ships' side shall be treated as a superstructure without regard to allowance for freeboard.

3.8 Tiers — Spaces above the higher of the bulkhead deck of free board deck in passenger ship, or the free board deck in cargo ships (*see* Fig. 1).

3.9 Margin Line — It an imaginary line drawn at 76 mm or more below the upper surface of the bulkhead deck at side.

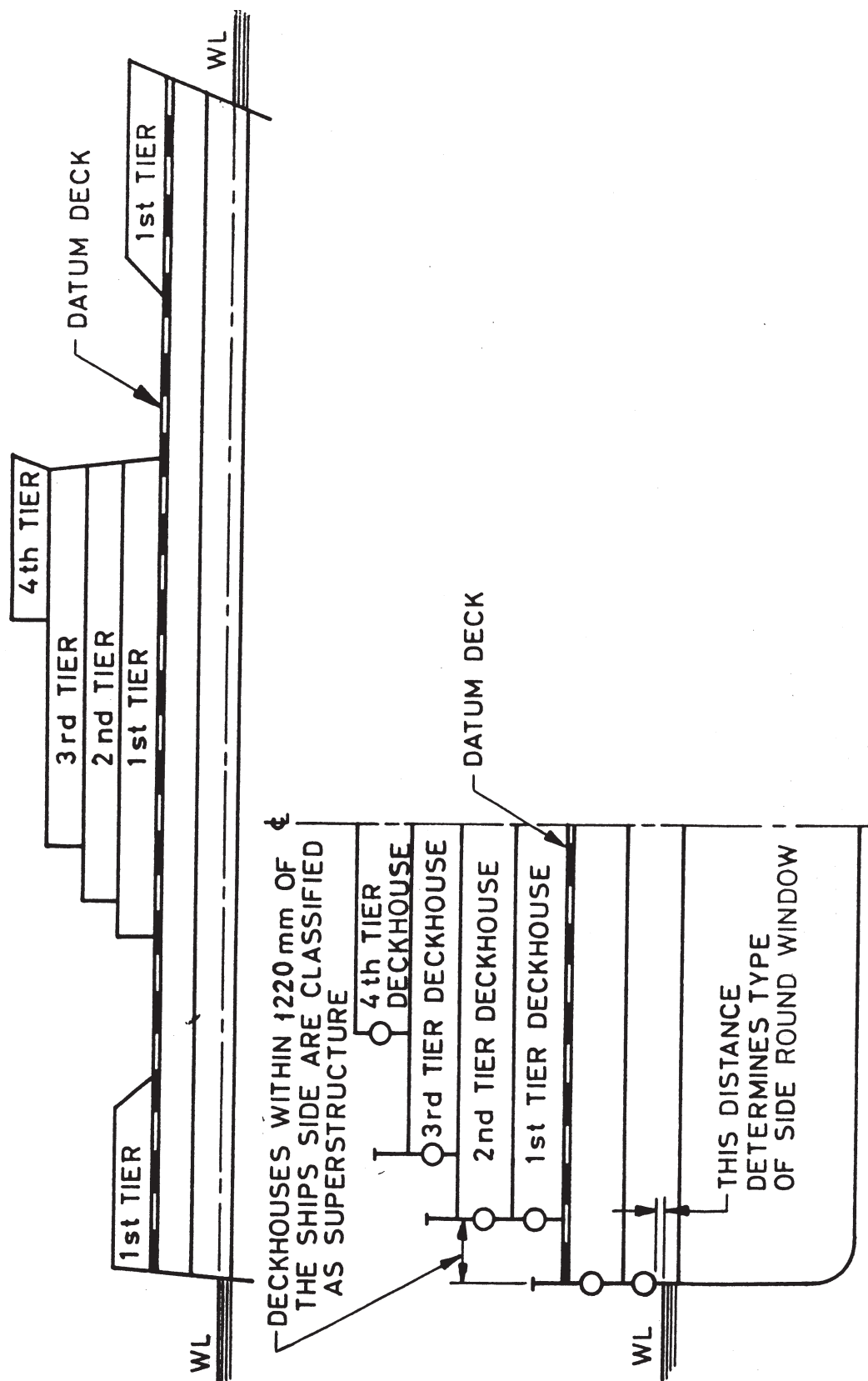


FIG. 1 DIAGRAM ILLUSTRATING TIERS AND DECK HOUSES

4 CLASSIFICATION

Round windows shall be classified by series, types, models and nominal sizes in accordance with 4.1 to 4.4 respectively. A survey of standardized round windows is given in 4.5. Further classification characteristics are the material classes (see 7.1).

4.1 Series

4.1.1 Regular Series (N)

Round windows of the regular series shall contain a toughened safety glass pane that meets the requirements of IS 6180.

4.2 Types

Ships' round windows may be of three types:

- Type A — Heavy type;
- Type B — Medium type; and
- Type C — Light type.

4.3 Models

Models shall be designated according to the following principal characteristics:

- Opening or non opening model;
- With or without deadlight;
- Opening direction of glassholder; and
- Type of fastening.

The various combinations of these, which are in accordance with the definitions given in IS 11914 are laid down in Table 1.

4.4 Nominal Sizes

The nominal size is defined by the clear light diameter d_1 of the round window (see Table 2).

4.5 Survey of Types, Models and Sizes

A survey is given in Table 3 for all round windows standardized in this standard applies to (regular) round windows.

The illustrations given in Table 3 do not define the construction; they are simplified examples for information only.

5 TECHNICAL REQUIREMENTS

5.1 General

Round windows of all series, types, models and nominal sizes shall be manufactured to the requirements (dimensions, materials etc) given in this standard. These shall be capable of meeting the test requirements specified in 7.

5.2 Dimensions

5.2.1 Main Dimensions

The main dimensions of round windows shall be as given in Fig. 2 and Tables 4 and 5.

NOTE — Figure 2 does not define the construction of any series, type or model of side scuttle; it is given for the indication of standardized dimensions only. The illustration shows an opening round window with deadlight.

5.2.2 Height of Spigot

The recommended nominal heights of the main frame spigot, which should be preferred for all types models and nominal sizes of side scuttles are given in Table 6.

5.2.3 Glass Recess

The diameter of the glass recess, d_4 in the glass holder of opening side scuttles and in the main frame of non-opening side scuttles shall be as given in Fig. 3 and Table 7.

Table 1 Principal Characteristics of Models
(Clause 4.3)

Sl No.	Opening or Non-opening	Deadlight	Further Attributes	Fastening		Model Designation Code		
				Bolted (B)	Welded (W)	Type		
						A (7)	B (8)	C (9)
(1)	(2)	(3)	(4)	(5)	(6)			
i)	Opening	with	Left hand ¹⁾ (L)	B	—	LB	—	
				—	W	LW	—	
			Right hand ¹⁾ (R)	B	—	RB	—	
				—	W	RW	—	
			Common hinged (S)	B	—	SB	—	
				—	W	SW	—	
		without	—	B	—	—	—	LRB
				—	W	—	—	LRW
ii)	Non-opening	with	—	B	—	NB	—	
				—	W	NW	—	
		without		B	—	—	—	NB
				—	W		—	NW

¹⁾ The deadlight opening upwards. Opening side scuttles with deadlight opening downwards may be supplied by special agreement only.

¹⁾ The deadlight opening upwards. Opening side scuttles with deadlight opening downwards may be supplied by special agreement only.

Table 2 Nominal Sizes of Round Windows
(Clause 4.4)

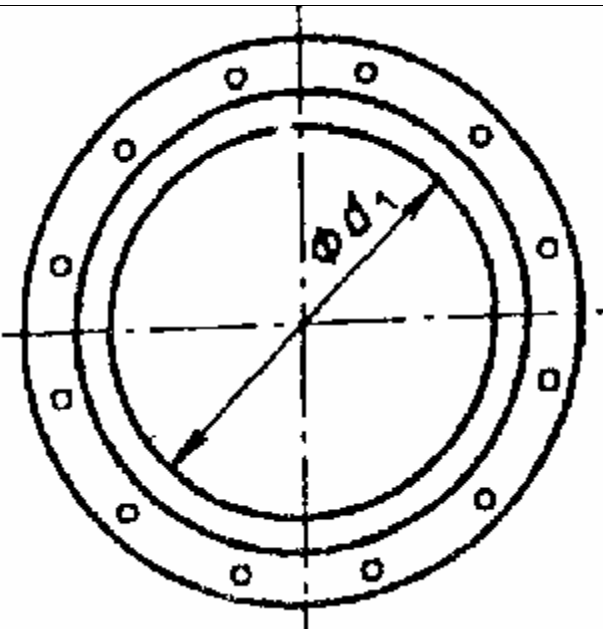
Sl No. (1)	Type (2)	Nominal Size, d_1 mm (3)	Illustration (4)
i)	A	200 250 300 350 400 —	
ii)	B	200 250 300 350 400 450	
iii)	C	200 250 300 350 400 450	

Table 3 Survey of Round Windows
(Clause 4.5)

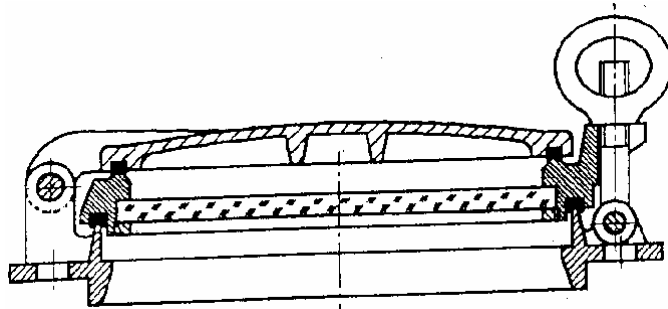
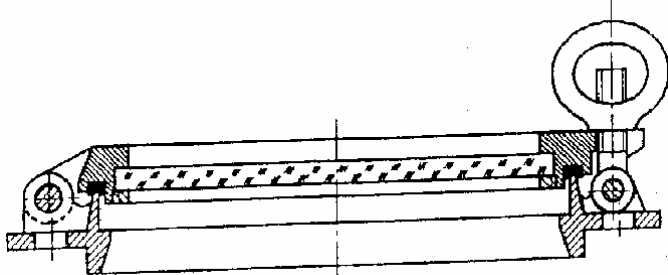
SI No.	Type (see 4.2)	Model (see 4.3)		Nominal Sizes, d_1 (see 4.4)	Illustration (Bolted Round Windows are Shown)
(1)	(2)	Bolted (3)	Welded (4)	(5)	(6)
Opening round windows					
i)	A and B	LB	—	Type A: 200 - 400 Type B: 200 - 450	
		—	LW		
		RB	—		
		—	RW		
		SB	—		
		—	SW		
ii)	C	LRB	—	200 - 450	
		—	LRW		

Table 3 (Concluded)

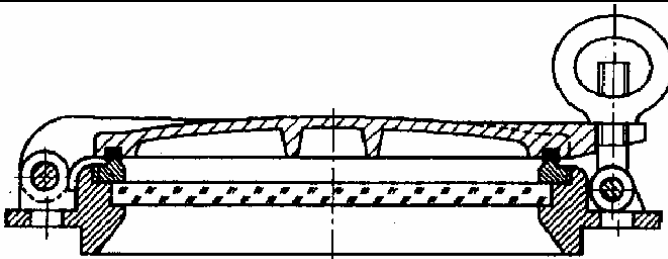
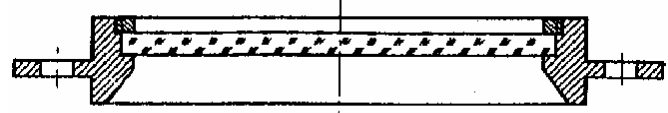
Sl No.	Type (see 4.2)	Model (see 4.3)		Nominal Sizes, d_1 (see 4.4)	Illustration (Bolted Round Windows are Shown)
(1)	(2)	Bolted (3)	Welded (4)	(5)	(6)
	Non-opening round windows				
iii)	A and B	NB	—	Type A: 200 — 400 Type B: 200 — 450	 WITH DEADLIGHT
		—	NW		
iv)	C	NB	—	200 — 450	 WITHOUT DEADLIGHT
		—	NW		

Table 4 Main Dimensions and Number of Fasteners of Round Windows

(Clauses 5.2.1 and 5.6.1)

All dimensions in millimetres.

Sl No.	Nominal Size, d_1			d_2	d_3	g	Minimum Number of Fasteners ¹⁾				
	Type						Type A		Type B		Type C
	A	B	C				Glass Holder	Deadlight	Glass Holder	Deadlight	Glass Holder
	(1)	(2)	(3)				(4)	(5)	(6)	(7)	Glass Holder (8)
i)	200	200	200	250	350	50	2	2	2	2	2
ii)	250	250	250	305	400	47.5	3	2	3	2	2
iii)	300	300	300	360	450	45	3	3	3	2	3
iv)	350	350	350	410	500	45	3	3	3	3	3
v)	400	400	400	460	550	45	3	3	3	3	3
vi)	—	450	450	510	600	45	—	—	4	3	3

¹⁾ The number of fasteners comprises only closing devices and hinges with round holes (see 5.6).

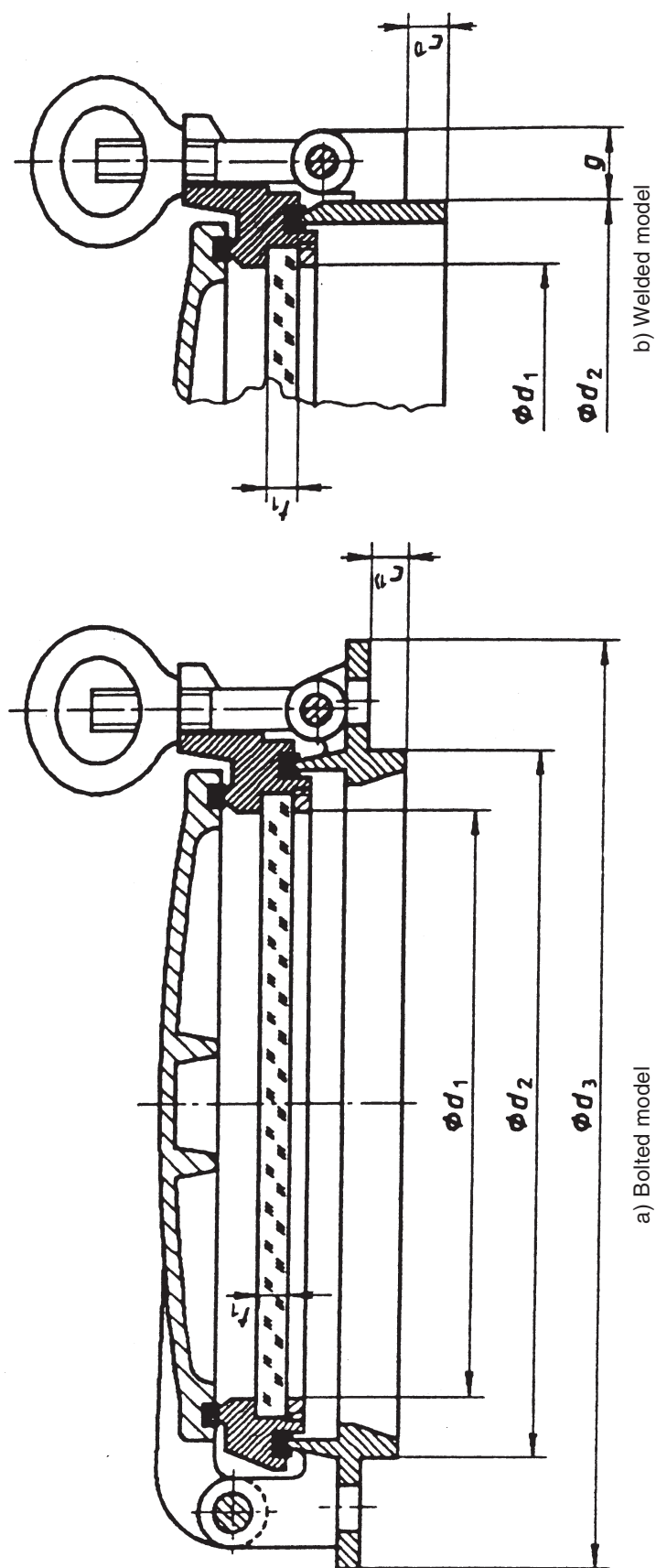
Table 5 Glass Thickness of Round Windows

(Clauses 5.2.1, 5.4.1, 5.5.3.1 and 5.5.3.2)

All dimensions in millimetres.

Side Scuttle		Glass Thickness, t_1					
Series	Type	Nominal Size, d_1					
		200	250	300	350	400	450
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
N Regular	A	1	12	15	15	19	—
	B	8	8	10	12	12	15
	C	6	6	8	8	1	10

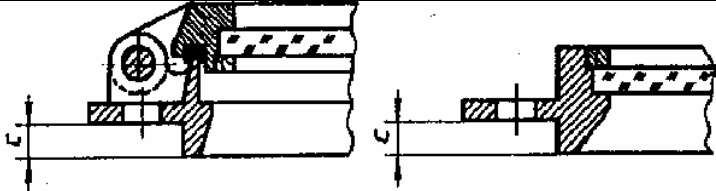
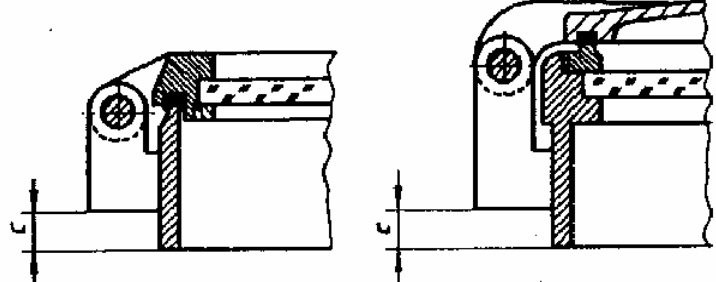
¹⁾ In special cases a greater glass thickness shall be used for obscured glass panes (see 5.5.3).

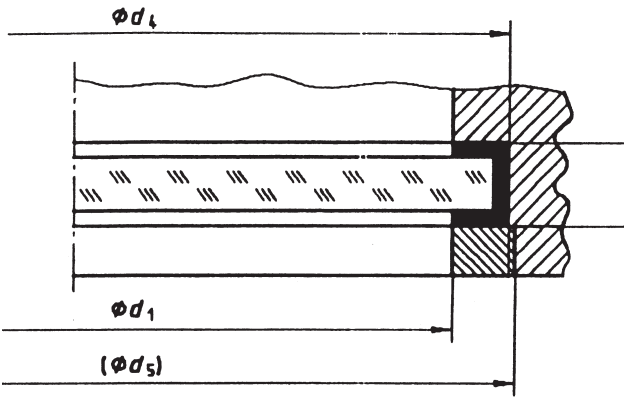


1) For the spigot height (dimension c), see 5.2.2 and Table 6.

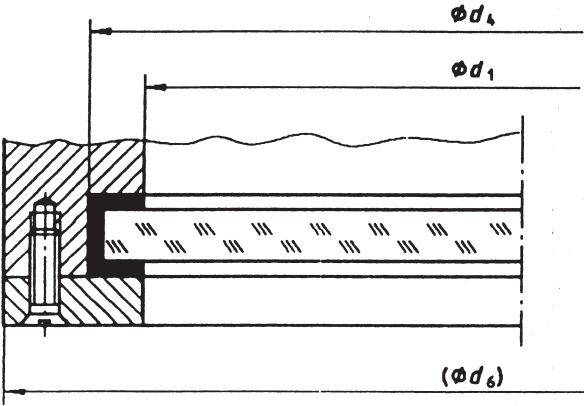
FIG. 2 MAIN DIMENSIONS OF ROUND WINDOWS

Table 6 Height of Spigot (Dimension *c*)
(Clause 5.2.2)

Sl No.	Model	Manufacturing Height mm (3)	Actual Height mm (4)
(1)	(2)		
i) Bolted		16	The actual required delivery height of the spigot may be agreed when ordering the side scuttle
ii) Welded		30	



a) Threaded glass retaining frame



b) Flanged glass retaining frame

FIG. 3 FIXING OF GLASS PANE AND GLASS RECESS

Table 7 Mounting Dimensions for Glass Pane

(Clauses 5.2.3, 5.3.1 and 5.3.2)

All dimensions in millimetres.

Sl No.	Nominal Size	200	250	300	350	400	450
(1)	d_1 (2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	d_4 minimum	217	267	322	372	422	472
ii)	d_5	M220 $\times$ 2	M270 $\times$ 2	M325 $\times$ 2	M375 $\times$ 2	M425 $\times$ 2	M475 $\times$ 2
iii)	d_6 minimum	248	298	348	398	448	498
iv)	Number of screw holes ¹⁾	10	12	14	16	18	20
v)	e	This dimension is left to the manufacturer's option. It depends on the thickness of the glass pane and glazing sealing material.					

¹⁾ Uniform pitch.

5.3 Glass Retaining Frame

For fixing the glass pane, a glass retaining frame shall be provided. Threaded glass retaining frames for screwing in or flanged glass retaining frames with holes for screwing on with screws are acceptable.

5.3.1 Threaded Glass Retaining Frame (RFA)

The main dimensions of a threaded glass retaining frame are given in Fig. 4 and Table 7. A type RFA glass retaining frame shall not be used for non-opening, welded round windows (model NW).

5.3.2 Flanged Glass Retaining Frame (RFB and RFC)

The main dimensions of a flanged glass retaining frame are given in Fig. 5 and Fig. 6, and Table 7. A type RFB glass retaining frame may be used for all types and models of side scuttles. Type RFC may only be used for round windows without deadlight.

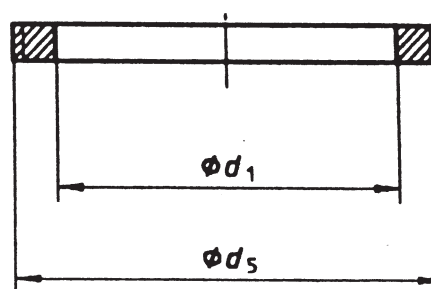
5.3.3 Screws for Flanged Glass Retaining Frames

To fasten glass retaining frames of types RFB and RFC, slotted or cross recessed screws in accordance with IS 1365, IS 1366, IS 6101, IS 7483, IS 7485 (Part 2), IS 7486 or IS 8911 should be used at the window manufacturer's discretion. Such screws shall have the following characteristics:

- Thread : M6;
- Length : 16 mm; and
- Material : Marine corrosion resistant copper alloy for round windows of copper alloy); stainless steel (for round windows of steel or aluminium alloy).

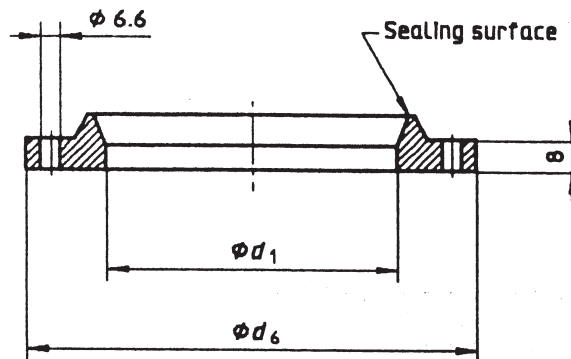
5.3.4 Main Frame

Minimum thickness of aluminum frame heavy, medium, light type to be 12 mm, 10 mm, 8 mm. respectively. Minimum thickness of mild steel welded heavy type frame to be 12 mm. and those for medium, light type to be 10 mm except for 200 mm size which will be 8 mm.



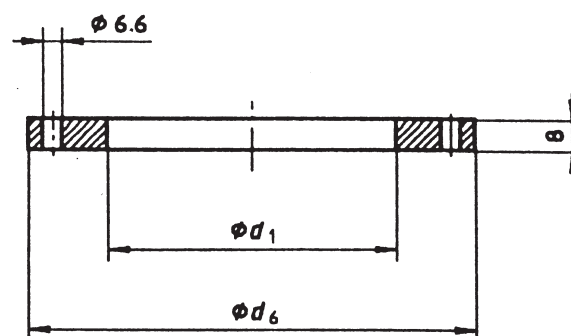
All dimensions in millimetres.

FIG. 4 GLASS RETAINING FRAME, TYPE RFA



All dimensions in millimetres.

FIG. 5 FLANGED GLASS RETAINING FRAME, TYPE RFB



All dimensions in millimetres.

FIG. 6 FLANGED GLASS RETAINING FRAME, TYPE RFC

5.4 Glass Panes

5.4.1 Panes for Regular Round Windows (Series N)

Clear or obscured toughened safety glass panes in accordance with IS 6180 shall be used; appropriate codes are given in Table 8. Correlation of glass thickness with types and nominal sizes shall be as given in Table 5 with the peculiarity for obscured glass panes given in 5.5.3.

Table 8 Finish of Glass Pane

Sl No. (1)	Kind of Finish (2)	Code (3)
i)	Clear	Y1
ii)	Obscured	Y2

5.5 Glazing

5.5.1 Glazing Material

An appropriate glazing material, resistant to sea water and ultraviolet light, shall be used.

5.5.2 Mounting of Glass Pane

When glazing, it is essential that the glass pane is centralized in the glass holder of opening round window or in the main frame of non-opening round window so that there is the same clearance all round.

5.5.3 Peculiarity for Obscured Glass Panes

5.5.3.1 Mounting position A

In general, obscured glass panes are positioned with the obscured surface outwards. For this positioning, the glass thicknesses given in Table 5 apply. It shall be noted, however, that the glass pane becomes transparent when wet.

5.5.3.2 Mounting position B

When, in special cases, an obscured toughened safety glass pane is positioned with the obscured surface facing inwards, a greater glass thickness than that specified in Table 5 shall be used. These greater thicknesses shall be as given in Table 9.

5.6 Fasteners (Closing Devices and Hinges)

5.6.1 Number of Fasteners

- The minimum number of fasteners comprising closing devices and hinges with round holes for glass holders and deadlights of Types A, B and C round windows shall be as given in Table 4.

- The total number of the fasteners and their construction shall be such that the round window meets the strength and water tightness requirement in 7.

NOTE — If the hole for the hinge of the glass holder and deadlight is oval, the hinge is not regarded as a fastener.

Table 9 Thickness of Obscured Glass Panes when Obscured Surface is Facing Inwards
(Clause 5.5.3.2)

All dimensions in millimetres.

Sl No. (1)	Nominal Size d_1 (2)	Glass Thickness for Type of Side Scuttle		
		A (3)	B (4)	C (5)
i)	200	15	12	10
ii)	250	19	12	10
iii)	300	—	15	12
iv)	350	—	19	12
v)	400	—	19	15

5.6.2 Closing Device

The swing bolt, swing bolt nut and swing bolt hinge pin are component parts of a closing device. Their main dimensions shall be as given in Table 10.

5.6.3 Hinges

The diameter of hinge pins shall be as given in Table 10.

Table 10 Diameter of Bolts and Pins
(Clauses 5.6.2 and 5.6.3)

All dimensions in millimetres.

Thread of Swing Bolt and Nut [in Accordance with IS 4218 (Part 2)] (1)	Diameter of Hinge Pin	
	Swing Bolt (2)	Glass Holder and Deadlight (3)
M20	12	16

5.7 Gaskets for Glass Holder and Deadlight

To ensure water tightness between the glass holder and main frame and also between the deadlight and glass holder, gaskets shall be used.

5.7.1 Type of Gasket

The gaskets shall be in accordance with IS 8809 at the manufacturer's discretion.

5.7.2 Fixing of Gaskets

The gaskets shall be secured in the grooves of the glass holder and deadlight by means of a suitable adhesive.

6 MATERIALS

6.1 Main Frame, Glass Holder, Glass-Retaining Frame and Deadlight

The main components of the round window (main frame, glass holder, glass-retaining frame and deadlight) shall be manufactured from the materials given in Table 11. These materials shall be marine corrosion-resistant and shall have the minimum mechanical properties given in Table 12. The values for the minimum tensile strength and minimum elongation given in Table 12 are valid for the types of

side scuttle indicated. However, the material used should comply with relevant Indian Standard.

The material class code numbers given in Table 11, which are for indicating the material in the side scuttle designations, are combinations of the material code numbers, given in Table 13, for the main frame, the glassholder and/or glass retaining frame and the deadlight, in that order.

6.2 Closing Device and Hinge Pin

Swingbolts, pins and nuts of the closing device and hinge pins for the glass holder and deadlight shall be

Table 11 Material Classes

(Clause 6.1)

Sl No.	Types of Side Scuttle	Method of Fastening Side Scuttle	Material Class Code Number	Material		
				Main Frame	Glass Holder and/or Glass-Retaining Frame	Deadlight
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	A	Bolted	112	Copper alloy ¹⁾		Iron or steel ²⁾
		Welded	212	Mild steel	Copper alloy ¹⁾	Iron or steel ²⁾
			222	Mild steel		
ii)	B	Bolted	112	Copper alloy ¹⁾		Iron or steel ²⁾
			333	Aluminium alloy ³⁾		
		Welded	212	Mild steel	Copper alloy ¹⁾	Iron or steel ²⁾
			222	Mild steel		
			333	Aluminium alloy ³⁾		
				4)	3)	3)
iii)	C	Bolted	110	Copper alloy ¹⁾		—
			330	Aluminium alloy ³⁾		
		Welded	210	Mild steel	Copper alloy ¹⁾	
			220	Mild steel		
			330	Aluminium alloy ³⁾		
				4)	3)	

¹⁾ The use of brass (cast or wrought) or gun metal is opional.

²⁾ The use of iron (spheroidal graphite cast iron) or steel (mild steel or cast steel) is optional.

³⁾ The use of cast or wrought alloy is optional.

⁴⁾ The use of plate or extruded material is optional.

Table 12 Tensile Strength and Elongation for Main Components

(Clause 6.1)

Sl No.	Type of Side Scuttle	Minimum Tensile Strength N/mm ²	Minimum Elongation Percent
(1)	(2)	(3)	(4)
i)	A	300	15
ii)	B	180	10
iii)	C	140	3

Table 13 Material Code Numbers

(Clause 6.1)

Sl No.	Material Code Number	Material
(1)	(2)	(3)
i)	1	Copper alloy material (for example brass, gun metal)
ii)	2	Ferrous material (for example mild steel, cast steel ductile iron)
iii)	3	Aluminium material (cast or wrought alloy)
iv)	4	No components (for example deadlights for type C side scuttles)

manufactured from materials having the following properties:

- Resistant to corrosion;
- No effect on the corrosion resistance of other parts; and
- Minimum mechanical properties as given in Table 14.

The valves for the minimum tensile strength and minimum elongation given in Table 14 are valid for the types of round window indicated. However, the material used should comply with relevant Indian Standard.

For aluminum alloy round windows, the swing bolts and hinge pin of the glass holder shall be made of non-corrodible steel, stainless steel or such alloys as are not likely to cause corrosion of round windows, bolts or pins.

Table 14 Tensile Strength and Elongation for Closing Devices
(Clause 6.2)

Sl No.	Type of Side Scuttle	Hinge Pin Swing Bolt and Swing Bolt Pins		Nut	
		Minimum Tensile Strength N/mm ²	Minimum Elongation Percent	Minimum Tensile Strength N/mm ²	Minimum Elongation Percent
(1)	(2)	(3)	(4)	(5)	(6)
i)	A	350	20	250	14
ii)	B	350	15	250	14
iii)	C	250	14	180	8

7 TESTING

7.1 Water Tightness Test

Maximum allowable pressures for round windows are given in Annex A.

7.1.1 Board Test

To ensure that the round windows and packing are watertight when fitted, a hose test shall be carried out by the shipbuilder to the satisfaction of the owner's or surveyor's representative.

The test shall consist of hosing the round windows means of at least 12.5 mm nominal size hose held at a distance of not more than 1.5 m from the round window and with a water pressure of at least 250 kPa.

7.1.2 Shop Test

An equivalent hydraulic test shall be carried out by the manufacturer before dispatch by means of batch tests (approximately 10 percent of the delivery batch, with a minimum of two round windows).

The round windows shall be tested by being subjected to the hydraulic pressures given in Table 15, under the following conditions:

- Procedure 1* — With glass pane and open deadlight except for type A, with diameters of 350 mm and 400 mm, where at a test pressure of 150 kPa the deadlight shall be closed.
- Procedure 2* — Without glass pane and closed deadlight.

The rationale behind Procedure 1 is that practice has shown that for normal round windows of Type A with a diameter of 350 mm or 400 mm, when subjected to a test pressure of 150 kPa, the deflection between the fixed points is so heavy that leakage occurs. A closed deadlight would support the glass holder and diminish the deflection.

Table 15 Test Pressures for Water Tightness
(Clause 7.1.2)

Sl No.	Side Scuttle Type	Test Pressure kPa	
		Procedure 1 (3)	Procedure 2 (4)
i)	A	150	100
ii)	B	75	50
iii)	C	35	—

7.2 Mechanical Strength Test

7.2.1 Prototype Test

Prototype round windows without glass pane and with closed deadlight shall be subjected to a mechanical strength test by a punch method using the test pressures given in Table 16.

Table 16 Test Pressures for Mechanical Strength
(Clause 7.2.1 and 7.2.2.2)

Sl No.	Side Scuttle Type	Test Pressure kPa
(1)	(2)	(3)
i)	A	240
ii)	B	120

NOTE — The test pressures in table are the values assumed for the calculation of the Proof loads to be applied by the punch test.

7.2.2 Test Performance

This test shall be based on IS 6180.

7.2.2.1 The punch shall be placed that side of the deadlight which could be subjected to direct contact with the sea. If the construction of the deadlight make it necessary, a plate of 100 mm diameter and 10 mm

thickness may be placed between the punch and the deadlight.

7.2.2.2 When subject to the pressure given in Table 16, the permanent deformation of the deadlight shall not exceed 1 percent of the nominal size of the round window.

8 MARKING

Round windows conforming to this standard shall be marked as indicated in **8.1**.

8.1 Marking of Body

- a) The main frame or some other metallic main component part shall be marked with the letter for the Types A, B or C.
- b) Further marking indications are optional, for example:
 - 1) Nominal size;
 - 2) Material class;
 - 3) Manufacturer's name or trade-mark; and
 - 4) Number of this Indian Standard.

8.2 Marking of Glass Pane

The glass pane shall be marked in accordance with IS 6180.

8.3 BIS Certification Marking

The product may also be marked with the Standard Mark.

8.3.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9 DESIGNATION

For ordering and reference purposes, round windows conforming to this Indian Standard shall be designated in accordance with **9.1** to **9.2**.

9.1 Elements for Designation

The following basic elements and additional elements for the different series of round windows pending on the type of round window glass pane shall be used, in the order given.

- a) Basic elements:
 - 1) Denomination (abbreviated) : round window;
 - 2) Number of this Indian Standard;
 - 3) Series (code letter), as specified in **4.1**;
 - 4) Type (code letter) as specified in **4.2**;
 - 5) Nominal size, as specified in Table 2;
 - 6) Height of spigot as specified in **5.2.2**;
 - 7) Model (code) as specified in Table 1; and
 - 8) Material class of round window (code number) as specified in Table 12.
- b) Additional elements for designation of regular round window with safety glass panes (series N):
 - 1) Finish of glass pane (code), as specified in **5.4.1**.

9.2 Examples

A round window in accordance with this standard of regular series (N), heavy Type A, nominal size $d_1 = 400$ mm, height of spigot $C=16$ mm, right hand opening bolted model (RB), material class 112, with glass pane of plate glass and glass finish clear (Y1) is designated as follows :

Round window IS 5474 — N-A400 × 16-RB-112-Y1

10 POSITIONING

Round windows shall be positioned in accordance with IS 12693.

11 INSTALLATION

For installation the relevant national rules and regulations apply, if any.

The diameter of the percent hole in the shell plate should be as given in Table 17.

Table 17 Precut Hole
(Clause 11)

All dimensions in millimetres.

Sl No. (1)	Nominal Size (2)	$d_{-7}^{+2}_0$ (3)	Illustration (4)
i)	200	254	
ii)	250	309	
iii)	300	364	
iv)	350	414	
v)	400	646	
vi)	450	514	

ANNEX A

(Clause 7.1)

MAXIMUM ALLOWABLE PRESSURE FOR SIDE SCUTTLES

A-1 The maximum allowable pressure p to which side scuttles of regular series N (glazed with toughened safety glass panes according to IS 6180) may be subjected is given in Table 18.

Table 18 Maximum Allowable Pressure
(Clause A-1)

Sl No. (1)	Type (2)	Side Scuttle Nominal Size mm (3)	Glass Thickness (<i>see Note</i>) mm (4)	Maximum Allowable Pressure kPa (5)
i)	A Heavy	200	10	328
		250	12	302
		300	15	328
		350	15	341
		400	19	297
ii)	B Medium	200	8	210
		250	8	134
		300	10	146
		350	12	154
		400	12	154
iii)	C Light	450	15	118
		200	6	118
		250	6	75
		300	8	93
		350	8	68
		400	10	82
		450	10	65

NOTE — The glass thickness applies to glass panes of side scuttles (series N). In special cases a greater glass thickness shall be used for obscured glass panes (*see 5.5.3*).

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